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ABSTRACT

This study discusses some of the central concepts, assumptions and methods used in the development and design of a Management Information and Evaluation System for the Peace Corps in Colombia. Methodological problems encountered are reviewed. The model requires explicit project or program objectives, individual staff behavioral objectives, client change-objectives, specification on inputs, and description and verification of outputs for staff and client changes. Verification procedures include a work situation description and analysis, in-process reports and meetings, and an end of service report and review by field personnel with staff verification. A process and analytical outline is presented and discussed. An appendix is also included--Initial Analytical Possibilities for M. I. & E. System outputs. (FDI)

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APPLICATIONS OF SOCIAL SCIENCE TO MANAGEMENT INFORMATION SYSTEMS AND EVALUATION PROCESS: A PEACE CORPS MODEL

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INTRODUCTION

This paper arises from a research and development project undertaken during 1971-72 in which the three authors helped design and implement a Management Information and Evaluation System for Peace Corps in Colombia. The system attempts to incorporate basic social science principles while providing for sufficient reward to encourage reasonably rigorous application of the system. We searched for those elements of theory and method which could be understood, appreciated and used by Peace Corps staff and volunteers who might be relatively unsophisticated in scientific method. The final product is presented here in outline form. A more complete description of the design and two early reports on its application are available in separate documents.[1]

We are in the midst of a period in history when the applications of social science knowledge and methodology are becoming increasingly relevant to the identification and solution of societal problems. Applied social science is becoming more respectable as a professional orientation within the social science community, partially because a great variety of experiments - as a part of the war on poverty, urban

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1. Henry Jibaja, Kirk Breed, William R. Lassey, Robert Anderson and Douglas Bishop. A Management Information and Evaluation System for Peace Corps/Colombia. Peace Corps, c/o U. S. Embassy, Bogota, Colombia, 1972. (Available from the authors.)

Preliminary Report: An Evaluation of Peace Corps Programs in Colombia. Peace Corps, c/o U. S. Embassy, Bogota, Colombia, 1972.

Henry J. Jibaja. A Reporting System for Use in Gathering Management and Information Data for Peace Corps Programs. Masters Thesis. Bozeman, Montana: Montana State University, 1972.

renewal, model cities programs, volunteer programs such as VISTA and Peace Corps, as well as other action efforts - have indicated the utility of social science concepts and methods in the development and improvement of organizational functioning and program achievements.

The confusion which seems to characterize many public and private efforts to solve social ills and realize the full development of deprived segments of society is discouraging. It is difficult to justify continued funding or many federal, state or local programs unless we can present clear-cut evidence of significant success in reaching predetermined goals.

The social and behavioral sciences have had substantial difficulty in applying theory and method to evaluation of these programs.[2] This is true in part because social and behavioral scientists have not often been trained to use their knowledge and skills in the on-going setting of operational programs: action program design and implementation is a frustrating enterprise, often unrewarding in terms of peer recognition, and requires a special kind of commitment that does not appear to be widely present among us.

Methodological Issues

Evaluation research in its most refined form attempts to systematically relate "objectives" or "goals" directly to "outputs" or "effects". Useful evaluation must be based on methods that (in so

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2 Francis G. Caro. Readings in Evaluation Research, New York: Russell Sage Foundation, 1971, p. ix.

far as possible) yield objective and comprehensive evidence that selected objectives have, or have not, led to the desired outcomes or effects. Likewise it is crucial to isolate the kinds of inputs or resources which have facilitated the achievement of (or failure to achieve) objectives. This requires careful recording and measuring of a wide variety of elements within the program process if valid and reliable evidence is to be obtained.[3]

Two major problems are often encountered in evaluation studies.

First, program administrators are notoriously reluctant to allow evaluators, (particularly if they are from outside the organization and not subject to administrative control) access to the system. However, if the results can be made directly useful for "management" purposes. resistance seems to mellow; hence the emphasis in the following pages on "management information" in direct relationship to evaluation.

Second, operational level organization members and their clients often resist evaluative interviews and hesitate to prepare reports or other instruments which supply the needed information. This suggests the need for a continuing "reward" or "re-enforcement" mechanism for any work related to information retrieval; otherwise the quality and completeness of participation may be intermittent at best or generate incomplete and biased data. The system under discussion attempts to "build in" a reward and re-enforcment procedure that will hopefully increase the probability of quality and completeness of reporting.

A broad range of other problems exist which the evaluation researcher will undoubtedly encounter but for our purposes these two major

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3. Herbert C. Schulberg and Frank Baker. "Program Evaluation Models and the Implementation of Research Findings," Ibid., pp. 72-80.

problems were most obvious.[4]

An important first requirement is the identification of how the results or output will be used. The system design can then be linked directly to these uses. In any complex organization management usually seeks hard data upon which decisions can be based, while also trying to assure task accomplishment, maintenance of employee satisfaction. Employees or subordinate personnel are often concerned primarily with satisfaction, secondarily with task and with management decisions only to the degree they yield employee reward. To achieve such purposes a behavioral science based strategy is needed for development of an M.I.&E. system which will allow for:

(a) involvement of personnel at all levels in the development of the system;

(b) an atmosphere in which information obtained will be accepted as central to the needs of management and subordinate personnel and which will lead to increased organizational productivity;

(c) the development of understanding, acceptance and appreciation of the role of evaluation in the planning and management process;

(d) evaluation as a continuous effort rather than a series of isolated events;

(e) the introduction of a process which ultimately becomes self-sustaining by the program managers, staff and operational

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4. Ibid., pp. 7-17.

level personnel;

(f) the measurement of success at all levels according to predetermined objectives written so as to specify expected performance results.

The design of a management information and evaluation system for an organization must of necessity be within the capability of the responsible staff. Levels of management competence are by no means uniform in social and technical assistance programs, particularly in the Peace Corps. Because the program deals with social and technological change of great variety it is often necessary to supplement objective statistical data with qualitative information.

Focusing on appropriate data parameters is facilitated by a series of questions which speak to the perceived needs of critical supporting or linked organizations. For Peace Corps some of these questions include:

(a) What is the present impact of programs on the client population? In the case of Peace Corps/Colombia, impact measurement is focused on the degree to which programs are meeting general Peace Corps goals, recorded objectives as defined in program documents and any goals of host government agencies with which Peace Corps works.

(b) In what kinds of programs should Peace Corps engage in the immediate future? The needs of the clients served by Peace Corps are constantly changing in scope and depth; information is required by the Peace Corps bureaucracy and the U. S. Congress to project needed changes well in advance of

specific planning for program adjustment.

(c) What problems or barriers might occur that could obstruct the development of future programs? Often an inordinate amount of organizational time and energy is spent dealing with recurring problems, without adequate information to comprehend and adjust to underlying causes. A systematic means of identifying and dealing with recurring issues is needed by Peace Corps management at all levels.

(d) What kind of in-country structure is needed to help the organization continue as a viable force in facilitating goal achievement? The structure needs to be flexible but with sufficient continuity so that programs are constantly in the process of planning, implementation, evaluation and replanning.

Basic Assumptions Underlying a M. I. & E. System

In order for a management information and evaluation system to become continuous certain basic assumptions must be acceptable and understood by all individuals responsible for some phase of the process. A careful orientation-educational process will usually be required to achieve such understanding. Some of these basic assumptions include:

(1) Specific general goals and attainable objec ives can be identified for programs of social and technological change.

(2) It is possible to empirically measure whether or not the general goals and specific objectives established for such programs have been achieved.

(3) Rewards and re-enforcement will be allocated so as to assure achievement of personal goals, high satisfaction and continuing commitment to organizational objectives among a high proportion of program personnel.

(4) Behavioral objectives are a key mechanism for clarifying reward, re-enforcement, satisfaction and commitment for each person in the organization, if they are prepared with sufficient care that results can be quantitatively or qualitatively measured with reasonable precision and shared with peer groups and managers.

(5) On the basis of both quantitative and qualitative measures a degree of objective attainment can be approximated for each program area, in a manner that is visible and comprehensible to staff, operational personnel and clients.

(6) Measures of achievement can be analyzed and interpreted in a form that will be useful for decisions relating directly to improved programming, personnel selection, training, personnel selection, training, personnel support and other management functions.

Carefully refined objectives should relate directly to measures of verification for each operating program. If objectives cannot be objectively verified they may be of questionable utility or relevance and may need re-consideration. For the system to remain valid it is important to avoid sudden and complete changes in the pre-determined program objectives. Systematic planning is essential to realize completion of goals and objectives while maintaining program flexibility.

An explanation of each component of the System in its "ideal" form should serve to illuminate the incorporation of these features in the basic design proposed here.

A MANAGEMENT INFORMATION AND EVALUATION MODEL

The model described here is designed to fit the operational idiosyncrasies of Peace Corps but the concepts and approach could presumably be adapted to fit other social and technological change programs.

Program Goals and Objectives

Overall program goals are statements identifying the program area and long range achievement expectations. The specific objectives are short, explicit statements describing the intended shorter range achievements of the program. They provide sufficient specificity to establish the general limits of each program element. They identify the group or groups to be served and specify the general nature of the service to be provided.

Individual Performance or Behavioral Objectives

The performance objectives arise from the general program goals and specific objectives. A crucial requirement is that the expected behaviors be written in measurable terms and identify the tasks and conditions of performance to accomplish the objectives; in other words a statement of pre-defined performance criteria is needed. Each objective must identify one specific educational, developmental or service function to be performed, the group of groups to be served by each individual and the specific nature of the service to be provided.

Specific Objectives for the Client Population

The ultimate goal of most social and technical change programs is to facilitate growth or development of a client population. If one can accept the thesis that human experience is measurable, then it is possible to prepare objectives which describe expected changes in a population. These client objectives should be drawn directly from the overall project objectives and from the behavioral objectives. Such client objectives provide direction, make more specific the long range goals towards which an organization is striving and represent expected conditions at the end of the program period, or at some later point in time depending on the nature of the program.

Inputs

A careful documentation of all human, financial and physical resources applied to the realization of objectives should be available. This would include staff and skill levels of field personnel, training inputs, equipment, transportation, host agency inputs and all other input factors which will have a direct influence on ability to achieve objectives.

Outputs - Staff or Field Personnel Accomplishments

The outputs are descriptive statements and statistics reflecting activities of all personnel engaged in the program. The statements should describe magnitudes of output, such as number of demonstrations given, people contacted or other quantitative indicators of activities and accomplishments, and include "qualitative" descriptive statements of activities which are not easily qualifiable of which note factors

constraining achievement of objectives. The fact that some outputs may go beyond or fall short of the stated objectives may indicate physical inability to achieve objectives, inappropriate objectives, budget limits or other constraints which were unknown during the planning process; the output information should contain explanatory statements identifying constaining or facilitating factors of this nature.

Outputs - Client Population Change

These statements describe changes attributable to program activity and/or the adoption of new behavior by the client population. Measurement at this level becomes extremely difficult and may need to be accomplished on a random sample of the client population using some of the techniques of diffusion research.[5]

VERIFICATION PROCEDURES

Verification of goal achievement is measured through a series of data collection stages beginning prior to work initiation and ending after departure of Peace Corps volunteers (PCV's). Each program type will use information retrieval procedures adapted to the unique requirements of each.[6]

Pre-service Job Description and Site Analysis

These instruments are designed to solicit detailed quantitative and qualitative information about the current conditions at the Peace

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5. Everett Rogers with F. Floyd Schmaker. Communication of Innovations: A Cross-cultural Approach. Free Press, 1972.

6. See Henry J. Jibaja. A Reporting System for Use in Gathering Management and Information Data for Peace Corps Programs. (Masters thesis, Montana State University, Bozeman, Montana, 1972) for a detailed accounting of program types in Colombia and information retrieval procedures used in the early data collection stages.

Corps volunteer work site, they also seek information regarding potential tasks to be performed. Much of the information can be collected from secondary sources. The pre-service job description will usually be completed during a site visit by program staff.

The site analysis of PCV's should be completed at the work location during the inital weeks of activity and seeks detailed information on social, cultural, technological and economic conditions. It is intended to provide an awareness of what conditions need to be changed as a prelude to establishing specific PCV behavioral objectives and any modifications in program objectives. The site analysis will directly facilitate understanding and adjustment to the work location. Since PCV's usually face cultural adjustment problems during their initial weeks, the site analysis process will serve to rapidly increase understanding of the work situation, while providing inital task functions, which should be "rewarding" to PCV's and should facilitate staff understanding of the PCV job situation.

In-Service Information Retrieval and Review of Activities

Each PCV will generate periodic reports (roughly three month interval) as a basis for review and redefinition of PCV and client objectives as well as indicators of achievement. They will be based on systematic records kept by the PCV's and usually discussed at conferences with the staff contact, host agency supervisors and (if possible) a member of the client population. The reports will enable managerial staff to determine the operational characteristics of each program on a continuing basis so that staff activity and program management can be adjusted accordingly. It provides an opportunity for field personnel

to systematically communicate with staff and local agency personnel, so that problems and accomplishments can be understood and reenforcement can occur. Such interaction and information exchanges should be "rewarding" to PCV's, staff, host agency personnel and client representatives; each should feel some sense of sharing in goal achievement and program adjustments.

End of Service Review:

Near the completion of service at a given work site the PCV will systematically review his work on the site and record changes since the initial site survey which can be traced directly or indirectly to his activities. The noted changes will provide a measure of the quantity and quality of impact. The supervisor or program coordinator and evaluation officer will review the final report and the field site to verify accuracy and completeness.

The following diagram contains a sequential illustration of how the system would collect information and generate analytical reports.[7]

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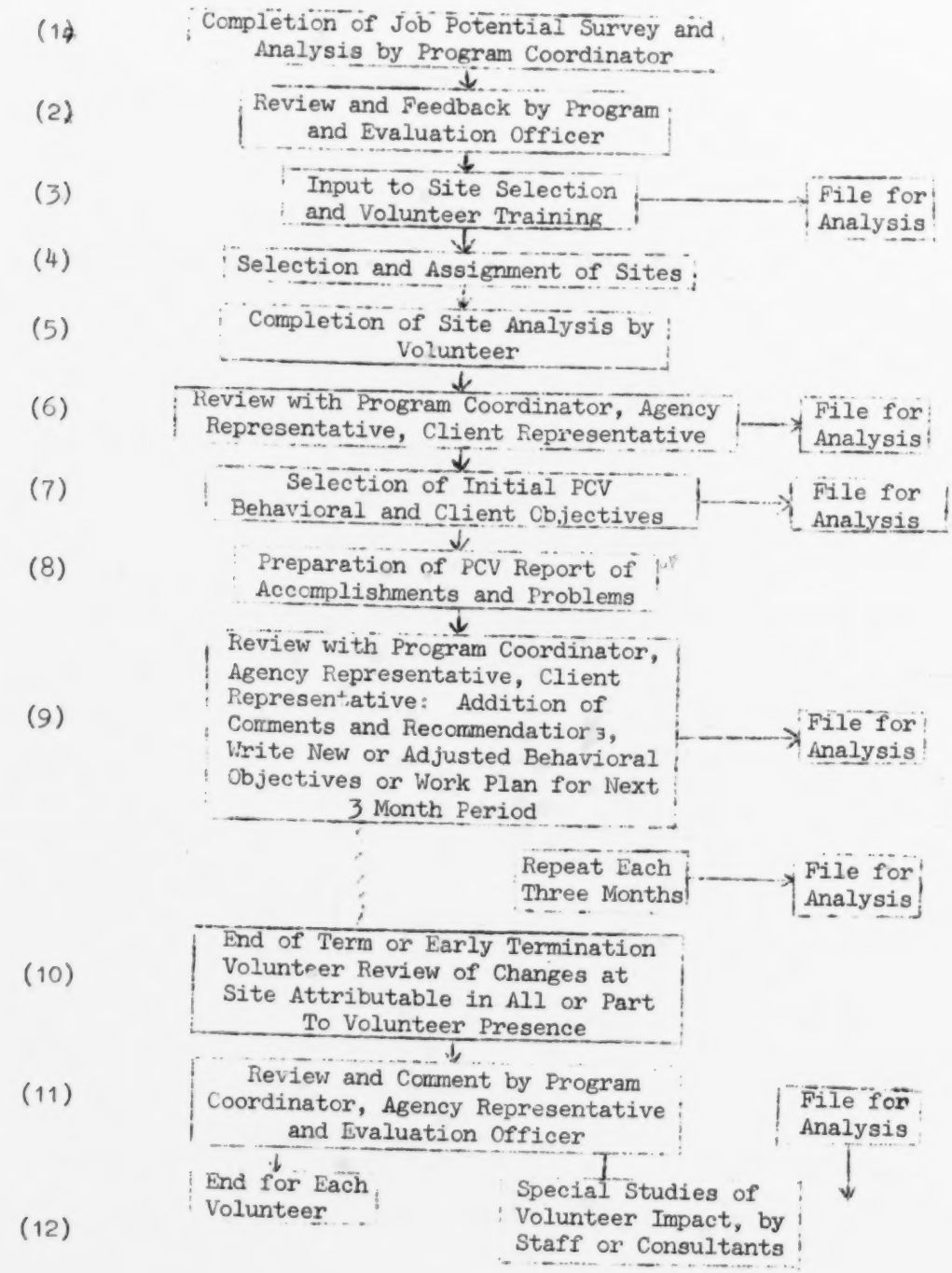
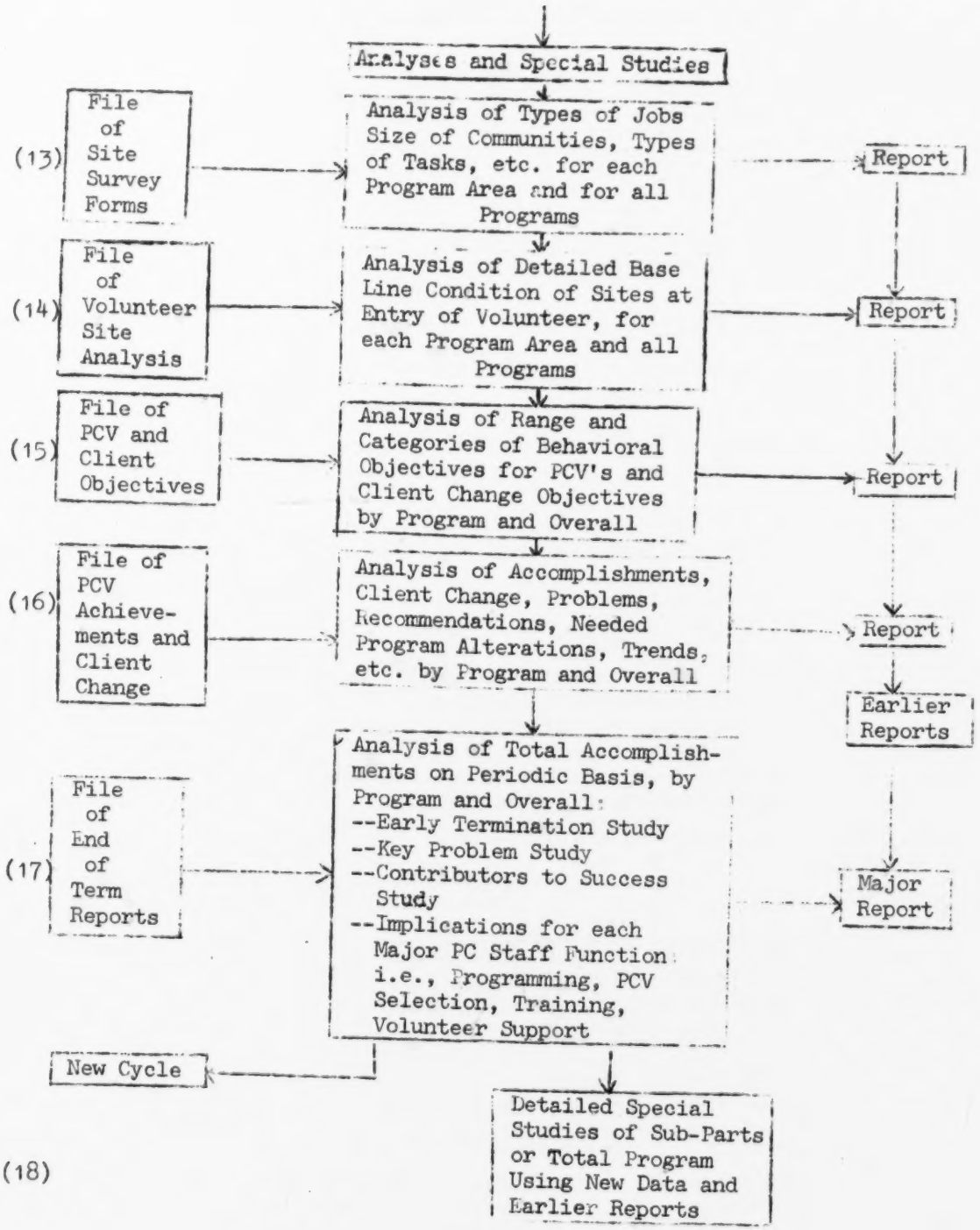
7. The reports in footnote 1 describe instruments now in use or in process of refinement. The Appendix suggests possibilities for use of the data in analytical studies of Peace Corps programs.

SYSTEM DESIGN FOR MANAGEMENT INFORMATION,
EVALUATION ANALYSIS AND REPORTING




Analyses and Special Studies
(13)
File of Site Survey Forms
Analysis of Types of Jobs Size of Communities, Types of Tasks, etc. for each Program Area and for all Programs
Report
(14)
File of Volunteer Site Analysis
Analysis of Detailed Base Line Condition of Sites at Entry of Volunteer, for each Program Area and all Programs
Report
(15)
File of PCV and Client Objectives
Analysis of Range and Categories of Behavioral Objectives for PCV's and Client Change Objectives by Program and Overall
Report
(16)
File of PCV Achieve-ments and Client Change
Analysis of Accomplishments, Client Change, Problems, Recommendations, Needed Program Alterations, Trends, etc. by Program and Overall
Report
Earlier Reports
(17)
File of End of Term Reports
Analysis of Total Accomplish-ments on Periodic Basis, by Program and Overall:
--Early Termination Study
--Key Problem Study
--Contributors to Success Study
--Implications for each Major PC Staff Function i.e., Programming, PCV Selection, Training, Volunteer Support
Major Report
New Cycle
(18)
Detailed Special Studies of Sub-Parts or Total Program Using New Data and Earlier Reports

First Application of the System

Implementation of the entire system at one point in time would obviously be difficult. Peace Corps staff in Colombia chose to begin with the periodic "volunteer planning and reporting" component (see block 8 on the diagram) since this would yield highly useful base-line data and would require involvement of essentially all staff and volunteers in examining the operation of existing programs. The "built-in reward" component for staff and PCV's is most evident in the planning and reporting system, since it provides specific management data, responds to many of the PCV concerns about inadequate attention from staff, helps PCV's organize their work and identifies where they stand with respect to Peace Corps goals as well as personal and host country objectives.[8]

The initial analysis of data from the planning and reporting forms of nearly all volunteers (96.6% rate of return) was based on "Task Element Descriptors," a term referring to single units of information, in short sentence of phrase form, describing the initiation, conduct or completion of a task. These "descriptors" were categorized according to logical groupings, as indicated in Chart I.

An illustration showing a summary of tasks planned and completed in one three month period is indicated in Table I, broken by program categories.

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8. A systematic method for helping PCV's plan their work and measure output has not heretofore existed in Colombia, or most other Peace Corps countries; hence, the planning and reporting component appears to be a useful point for incorporating better planning techniques in testing the system. (Other components are also in process, but have yet to yield published data.)

CHART I

TASK ELEMENT DESCRIPTOR CATEGORIES

A. Contribution to client learning.

- A1. Formal classroom instruction
- A2. Informal "extension" instruction in a field setting
- A3. Preparation of educational or library materials

B. Production of new information

- B1. Studies of general value
- B2. Studies useful to groups or firms
- B3. Studies useful to individuals only

C. Creation of or contribution to new organizations

D. Producing or contributing to new action programs

E. Producing or contributing to planning of new economic or social development

F. Designing or contributing to modification or reorganization of existing organizational structures

G. Program maintenance tasks

H. Non-programmed tasks

- H1. Which could not have been performed by host country professionals
- H2. Which could have been performed by host country professionals

I. Orientation or assistance to other PCV's

J. Advanced preparation to increase PCV productivity

- J1. Technical training
- J2. Language training
- J3. Host agency orientation

K. Service to the Peace Corps program

- K1. Assistance to staff or assumption of temporary staff position
- K2. Acquisition of supplies or equipment

L. Other non-categorized work

TABLE 1

SUMMARIZATION OF TASKS PLANNED AND COMPLETED BY COLOMBIA PCV's: OCTOBER THROUGH DECEMBER, 1971.

PROGRAM AREA	No. PCV's Reporting	No. Planned	No. Completed	Percent Completed	No. Completed w/o Plan
1. Agricultural Planning	1	5	5	100	0.0
2. Architecture	2	5	5	100	0.0
3. Business Assistance	17	108	91.5	85	7.0
4. Cattle Extension	20	160	133.5	83	15.0
5. Conservation	18	88	70.5	80	1.0
6. Cooperative Development	17	56	44	79	5.0
7. Crops Exten.	20	153	138.5	90	6.0
8. Crops Research	5	20	19	95	0.0
9. Education	15	41	37.5	91	6.0
10. Nursing	9	43	38.5	90	0
11. Nutrition and Home Economics	34	142	114.5	81	31.0
12. Social Work and Social Organization	2	11	11	100	0.0
13. Sports Development	5	13	13	100	2.0
Total	165	845	721.5	85	73.0

Several major conclusions may be drawn on the basis of these initial results

1. Volunteers responded well to the planning and reporting system, in terms of returned reports and commitment to supporting the system. (96.6%, albeit with some pressure from staff).
2. Volunteers completed 85 percent of their planned activities.
3. Volunteers are contributing directly and effectively to educational programs, research, development of new organizations or adaptation of existing structures, planning of new development, generation of new action programs, and are increasing their own skills and abilities to conceptualize and solve problems. These achievements are to be expected as part of Peace Corps activity, but heretofore there has been little "Hard" evidence that presumed activities were in fact achieving objectives.
4. Substantial staff time is required to develop and implement such a system if it is to fit the needs of an operational program. This time requirement must be counted as a short-term cost or investment which should lead to long term saving of time and resources as well as substantially greater program effectiveness.

Nevertheless, it should be made clear that this initial data is by no means definitive and does not constitute an adequate test of the viability of the total system as described. There has been nearly a complete turnover in top level Colombian Peace Corps staff since the system was inaugurated, which has served to delay full implementation and testing of the system for all programs. However, it has proved

essentially workable in the cattle program where the most detailed early application was attempted.

The system as designed has been widely disseminated throughout the Peace Corps, and certain other ACTION programs but the authors have received little feedback to indicate the extent of application to date. A high level of turmoil and budget uncertainty within Peace Corps over the last year would lead us to assume there has been modest attention to the kind of systematic management information and evaluation process proposed here and partially tested in Colombia.

Summary

The model of a management information and evaluation system incorporates research design and data collection processes appropriate to social and technological change programs. The information generated could readily be used in a reasonably sophisticated research program, assuming that adequate rigor was used for data collection (see the Appendix).

Few federal, state, and local organizations have chosen to use systematic procedures in developing management information and evaluation systems. Presumably the failure to do so arises from inadequate knowledge of social scientific concepts among organizational staff, or a lack of appreciation for the utility of the information obtained as an input to the management and evaluation process. The model described here may offer some assistance but would need substantial adaptation to assure effective applications to other socially oriented programs or technical assistance efforts.

It remains to be seen, however, whether such a system can be

maintained without the direct guidence and involvement of professional social-behavioral scientists. Organizational managers and staff almost invariably tend to become overburdened with the practical day-to-day concerns required for task accomplishment and organizational maintenance; they may therefore neglect to insist upon rigorous use of such a system, particularly with respect to the analytical treatment of information from which direct applications to improved organizational effectiveness could result.

Regardless of its simplicity application of the model requires an appreciation of the difficulties in designing instruments and methods to obtain valid and reliable data. In many organizations and agencies it may be appropriate, and even crucial, to obtain the assistance of sophisticated and experienced social-behavioral scientists at least as consultants in the design, development and monitoring of the information retrieval and evaluation process.

With specific respect to the Peace Corps program in Colombia, the system has become sufficiently operational that outputs are already being used to redesign the programing of Peace Corps volunteers. Significant improvements have occurred in volunteer selection, training, improvement of volunteer performance, and improvement of staff performance. However, it is also clear that the application of the system varies substantially between individual staff members and volunteers; the commitment to the system depends heavily on the experience, training, and general orientation of the individuals involved.

Many managers feel rather strongly the "intuitive" management, based on occasional written reports, and occasional contact with field

personnel and their clients, is less time consuming, more "personal," and sufficiently effective. They may be right, but how are we to know unless we can somehow directly compare the approaches? This would seem to require application of an experimental model to programs with varying degrees of management rigor. Some efforts in this direction have been attempted but more thorough applications of an experimental design are needed, possibly the "basic" and "applied" investigators among us can collaborate in such an endeavor.[9]

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9. Chapters 22-29 of the Caro book, referred to in footnote 2, contain several examples of experimental evaluation efforts.

APPENDIX

INITIAL ANALYTICAL POSSIBILITIES FOR M. I. & E. SYSTEM OUTPUTS

1. Analysis of volunteer impact on the host country based on the kind of PCV contributions:

   a. New learning (i.e., classes, demonstrations, talks, etc.)

   b. New information (studies, surveys, reports, analyses, etc.)

      -Studies of general value in a subject area.
      -Studies useful to a firm or group (i.e. feasibility analysis)
      -Studies useful to an individual only (i.e. soil test)

   c. New organization (i.e., Mother's Nutrition Club, cooperative, etc.)

   d. New action (i.e., construction of road or school, adoption of new accounting system).

   e. Planning for development (i.e., farm planning, plan for Nutrition program, etc.)

   f. Designs for changed structure (i.e., production processes, organization of cooperatives, hospital organization, etc.)

   g. Tasks completed that could not competently be done by available Columbians (i.e., supervise school construction, supervise home gardens, etc.)

   h. Orientation or learning by PCV to enable increased effectiveness.

   i. Others

2. Complete tabulation of indicators of client change:

   -Categorization by degree of change and type of change (i.e., behavior, attitude, group action, etc.)

   -Number and type of client involved.

3. Tabulation and categorization of each kind of new practice or innovation adopted by clients of PCV's. Then:

   a. Estimate economic or social value of the practice for each type of client or other unit (i.e., animals vaccinated)

   b. Compute an approximate quantitative and qualitative value of the change, in economic and social terms.

c. Compute approximate total economic and social values for all Peace Corps programs in Colombia.

d. Estimate contribution to development of Colombia for one year.

4. Comparative analysis of cost to Colombia if Colombians were to do the same tasks as PCV's are now doing.

5. Comparison of number and value of tasks among the different programs, to estimate relative value of each kind of program.

6. Number of tasks planned but not accomplished and number of accomplishments not planned.

7. Relate number and quality of tasks accomplished to number of quarters of service as a PCV.

8. Relation of individual PCV activities to

   a. Original program document (that brought PCV's to the host county)

   b. Most recent program modifications.

9. Relative cohesiveness of programs - that is, which programs seem to have the least variation from the program goals in terms of PCV tasks undertaken.

10. PCV effectiveness related to geographical and climatic and other site conditions.